Office Action Summary Examiner
Description of Part Institute Description Descript
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILLING DATE OF THIS COMMUNICATION. - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication. If the period for reply specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. Failure to reply within the set or extended period for reply will, by statule, cause the application to became ABANDONED (53 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b). Status 1) Responsive to communication(s) filed on 23 August 2004. 2a) This action is FINAL. 2b) This action is non-final. 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213. Disposition of Claims 4) Claim(s) 1-4,6-24 and 34-37 is/are pending in the application. 4a) Of the above claim(s) is/are withdrawn from consideration. 5) Claim(s) is/are allowed. 6) Claim(s) is/are allowed. 6) Claim(s) is/are objected to. 8) Claim(s) is/are objected to.
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8) Claim(s) are subject to restriction and/or election requirement.
Application Papers
9) The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.
Priority under 35 U.S.C. § 119
12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No
3. Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.
See the attached detailed Office action for a list of the certified copies flot received.
Attachment(s)
1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 4) Interview Summary (PTO-413) Paper No(s)/Mail Date
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 5) Notice of Informal Patent Application (PTO-152) Check the process of the pr

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DETAILED ACTION

Status of the Application

- 1. The Response filed August 23, 2004 is acknowledged.
- 2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Status of the Claims

3. Claims 1-33 were pending. Applicants amended claims 1-4, 6, 8 and 10-24. In addition, Applicants added claims 34-37 and canceled claims 5 and 25-33. Therefore, claims 1-4, 6-24 and 34-37 are currently pending and examined on the merits.

Withdrawn Objections/Rejections

4. The objections to the specification are withdrawn in view of Applicants' arguments and/or amendments. The objections to the claims are withdrawn in view of Applicants' arguments and/or amendments. The Enablement and Written Description rejections under 35 U.S.C. 112, first paragraph are withdrawn in view of Applicants' arguments and/or amendments. The 35 U.S.C. 112, second paragraph rejection is withdrawn in view of Applicants' arguments and/or amendments. The Wohlstadter et al. rejection under 35 U.S.C. § 102(b) is withdrawn in view of part (see below). The Sheppard et al. rejection under 35 U.S.C. § 102(b) is withdrawn in view of

Applicants' arguments and/or amendments. All other rejections are maintained and the arguments are addressed below.

Outstanding Objections and/or Rejections

Claims Rejections - 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 5. Claims 1-10, 12, 14-15 and 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Wohlstadter et al. (WO 96/28538) (Date of Publication is **September 19, 1996**).

For *claims 1, 14-15, 34,* Wohlstadter et al. (see entire document) disclose methods for making and characterizing a patterned multi-array, multi-specific surface (PMAMS) that anticipates claims 1, 14-17 and 20. For example, Wohlstadter et al. disclose a substrate having multiple regions on the substrate that are not coated with an organosilane (e.g., see Wohlstadter et al., figure 5A showing substrate with multiple regions i.e., an array of triangles, circles and squares; see also figure 13 showing multiple regions containing SAMs on a metal surface i.e., element 1400, 1404 and 1408, which does not represent "organosilane" reagents because SAMs are typically alkanethiols not "organosilane" compounds e.g., see page 24, line 18; see also page 14, line 21 wherein "gold" is disclosed as the metal; see also page 22, paragraph 3 wherein many different

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substrates are disclosed including glass, plastic, ceramic, polymeric, silicon, layered materials, etc). For example, the gold is deposited over the entire surface so it must be deposited in at least 10 regions because the entire surface encompasses more than 10 regions. In addition, gold falls within the scope of group 6, 7, 8, 9, 10 and 11 metals from the periodic table and is also specifically referred to in Applicants' dependent claim 12. Finally, s second material (e.g., either conducting particles or conducting polymers) is deposited onto the gold, but does not modify the gold in regions where SAMs have been deposited (e.g., elements 1306 and 1406 in figures 12 and 13).

Wohlstadter et al. further disclose substrates with holes in these regions (e.g., see Wohlstadter et al. page 26, paragraphs 2-6 and paragraph 1 on page 27 wherein "porous" substrates are disclosed that have "holes" ranging between 50 Å to 10000 μm; see also page 37, lines 1-2, "collections of binding domains may be located in ... holes in the support"; see also page 26, line 16 wherein Wohlstadter et al. states hat the "pores may extend partially and/or fully through the material"). Wohlstadter et al. also disclose that the "uncoated" gold regions may have a border with an organosilane agent coated on the substrate (e.g., see page 8, lines 17-21; see also page 24, paragraph 3, especially line 19 wherein Wohlstadter et al. disclose the use of an "alkyltrichlorosilane"; see also page 32, line 29; see also page 33, paragraph 1). Furthermore, Wohlstadter et al. disclose "25 to 100" binding domains (e.g., see Wohlstadter et al., page 22, paragraph 2; see also Figure 5), which is "at least 10" and also "at least 50" regions.

In addition, Wohlstadter et al. further disclose depositing a polymer on the regions not coated with an organosilane agent, wherein the polymer covers the hole (e.g., see

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Wohlstadter et al., page 39, line 27 wherein Wohlstadter et al. disclose "synthetic polymers" and other "natural" polymers like proteins; see also page 84, lines 36-37; see also page 90, line 31). Finally, Wohlstadter et al. disclose polymers of a thickness that would allow the characterization technique to project through the polymer (e.g., Wohlstadter et al. disclose a variety of thickness that allow characterization via ECL; see page 95, paragraphs 1-3; see also page 67, line 15).

For *claims 2*, *6-10 and 35-36*, Wohlstadter et al. disclose an alkyltrichlorosilane (e.g., see Wohlstadter et al., page 24, line 19).

For *claims 3*, Wohlstadter et al. disclose templates (e.g., see figure 5c).

For *claim 4*, Wohlstadter et al. disclose vapor deposition (e.g., see page 39, lines 35-36).

For *claims 5*, *12*, Wohlstadter et al. disclose gold (e.g., see Wohlstadter et al., page 14, line 21; see also page 34, line 4; see also page 69, line 37).

For *claim 37*, Wohlstadter et al. do not explicitly mention the contact angle, but Wohlstadter et al. disclose the use of Applicants' preferred gold/alkyltrichlorosilane materials and, as a result, would inherently possess the greater than 90° contact angle. "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). The Office does not have the facilities to make such a comparison and the burden is on the applicants to establish the difference. See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *Ex parte Gray*, 10 USPQ 2d 1922 1923 (PTO Bd. Pat. App. & Int.).

Response

6. Applicant's arguments directed to the above 35 U.S.C. § 102 rejection were fully considered (and are incorporated in their entirety herein by reference) but were not deemed persuasive for the following reasons. Please note that the above rejection has been modified from it original version to more clearly address applicants' newly amended and/or added claims and/or arguments.

[1] Applicants argue, "Wohlstadter fails to disclose these features [referring to deposition of group 6,7,8,9,10 and 11 metals of periodic table in at least 10 region and thereafter placing the substrate in a solution comprising a second material, thereby modifying the surface tension of the substrate but not a surface tension of the first material in said at least 10 regions]. The only mention of a material being coated on the substrate that falls within the Markush group of claim 1, is as a film covering the substrate" (e.g., see 4/6/04 Response, page 24, first full paragraph).

[2] Applicants argue, "Independent claim 16 requires depositing a first material onto the substrate through the template ... " (e.g., see 4/6/04 Response, page 24).

This is not found persuasive for the following reasons:

[1] The Examiner contends that that the gold film covering anticipates Applicants' claimed invention. For example, the gold is deposited over the entire surface so it must be deposited in at least 10 regions because the entire surface encompasses more than 10 regions. In addition, gold falls within the scope of group 6, 7, 8, 9, 10 and 11 metals from the periodic table and is also specifically referred to in Applicants' dependent claim 12. Finally, s second material (e.g., either conducting particles or conducting polymers) is deposited onto the gold, but does not

modify the gold in regions where SAMs have been deposited (e.g., elements 1306 and 1406 in figures 12 and 13). Thus, Wohlstadter anticipates the claimed invention.

[2] The rejection has been withdrawn with regard to independent claim 16.

Accordingly, the 35 U.S.C. § 102 rejection cited above is hereby maintained.

Claim Rejections - 35 USC § 103

- 7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
- 9. Claims 1-15 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wohlstadter et al. (WO 96/28538) (Date of Publication is **September 19, 1996**) and Weinberg et al. (US 6,419,881 B1).

For *claims 1-10, 12, 14-15 and 34-37*, Wohlstadter et al. teach all the limitations stated in the 35 U.S.C. 102(b) rejection above (incorporated in its entirety herein by reference), which anticipates and thus renders obvious claims 1-10, 12, 14-15 and 34-37.

The prior art teaching of Wohlstadter et al. differs from the claimed invention as follows:

For *claim 11*, the prior art teaching of Wohlstadter et al. differs from the claimed invention by not specifically reciting the use of infrared spectroscopy or X-ray fluorescence.

For *claim 13*, the prior art teaching of Wohlstadter et al. differs from the claimed invention by not specifically reciting the use of a "polyolefin". Wohlstadter et al. is deficient in that it only recites the use of a "polymer" and does not explicitly mention a "polyolefin" polymer (see Wohlstadter et al., page 39, line 27; page 84, line 36; page 90, line 31).

However, Weinberg et al. teach the following limitations that are deficient in Wohlstadter et al.:

For *claim 11*, Weinberg et al. teach infrared spectroscopy (e.g., see column 12, line 17, see also column 10, line 51).

For *claim 13*, Weinberg et al. (see entire document) teach that "polyolefins" may be used in high throughput screening methods that employ arrays wherein the polyolefin is bound to the substrate (e.g., see Weinberg et al., Examples; see also claim 20).

For *claims 15*, Weinberg et al. also teach the use of holes (e.g., see column 15, lines 27-32; see also column 31, line 50; see also column 14, section B, especially line 57).

It would have been obvious to one skilled in the art at the time the invention was made to use the array of "polyolefins" as taught by Weinberg et al. with the array of "polymers" as taught by Wohlstadter et al. because "polyolefins" are polymers i.e. polyolefins falls within the scope of the Wohlstadter et al. reference. Furthermore, one of ordinary skill in the art would have been motivated to use the polyolefins because Weinberg et al. claims polyolefins as a preferred embodiment (e.g., see claim 20). Furthermore, one of ordinary skill in the art would have reasonably expected to be successful because Weinberg et al. teach successful examples of polyolefin arrays.

Response

- 10. Applicant's arguments directed to the above 35 U.S.C. § 103(a) rejection were fully considered (and are incorporated in their entirety herein by reference) but were not deemed persuasive for the following reasons. Please note that the above rejection has been modified from it original version to more clearly address applicants' newly amended and/or added claims and/or arguments.
- [1] Applicants argue, "As discussed above, Wohlstadter discloses depositing gold as a continuous film underlying the binding domains, but does not disclose depositing the claimed material onto the substrate in at least 10 regions" (e.g., see page 26, paragraph 1).
- [2] Applicants argue, "Independent claim 16 requires depositing a first material onto the substrate through the template ... " (e.g., see 4/6/04 Response, page 24).

This is not found persuasive for the following reasons:

[1] The Examiner respectfully disagrees. Nothing in the claims require that the "at least 10 regions" be "separated" as Applicants seem to be implying. Here, the gold is placed over the entire surface, which includes many regions defined by the Application of SAMs, Antibody, etc.) The fact that the gold is applied over the entire surface in one layer is immaterial because this layer encompasses at least 10 regions as defined by the SAMS, Antibody, etc. Please note that claims are to be given their broadest reasonable interpretation consistent with Applicants' specification (e.g., see *In re Zletz*, 13 USPQ2d 1320, 1322 (Fed Cir. 1989) (holding that claims must be interpreted as broadly as their terms reasonably allow); see also MPEP § 2111.

[2] The rejection has been withdrawn with regard to independent claim 16.

Accordingly, the 35 U.S.C. § 103(a) rejection cited above is hereby maintained.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970), and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-4, 6-24 and 34-37 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-31 (especially claims 1-23) of U.S. Patent Application No. 20020197454 A1 (herein referred to as '454) (Serial No. 10/210,915). Although the conflicting claims are not identical, they are not patentably distinct from each other because the examined claims are either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1986). Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-4, 6-24 and 34-37 are generic to all that is recited in claims 1-31 (especially claims 1-23) of '454. That is, claims 1-31 of '454 falls entirely within the scope of claim 1-4, 6-24 and 34-37 or, in other words, claims 1-4, 6-24 and 34-37 are anticipated by claims 1-31 of '454. For example, claim 1 of '454 falls entirely within the scope of claim 1 of the present application or, in other words, claim 1 is anticipated by claim 1 of '454. Specifically, [1] both claims recite a method to characterize an array of polymeric materials using a substrate with at least to regions (compare claim 1 of '454 to claim 1 of the present application), [2] claim 1 of '454 disclose "depositing an unsilanizable material onto a silanizable substrate in at least 10 regions, thereafter contacting the substrate with an organosilane agent thereby silanizing the substrate but not the unsilanizeable material in said regions" falls entirely within the scope of "depositing wettable material onto a substrate in at least 10 regions, thereafter contacting the substrate with a non-wettable material thereby rendering the substrate non-wettable but not the wettable material in said regions" because the unsilanizable/silanizable materials and/or substrates fall entirely within the scope of non-

wettable/wettable materials and/or substrates (e.g., compare claim 1 of '454 to claim 1 of the present invention; see also claim 2 showing that unsilanizable/silanizable materials fall within the scope of non-wettable/wettable materials), [3] both references disclose optionally, partially or completely removing the wettable/unsilanizable materials and depositing at least 10 polymeric materials onto said regions (compare claim 1 of '454 to claim 1 of the present invention), and [4] both applications disclose characterizing the materials (compare claim 1 of '454 to claim 1 of the present invention.

This is a <u>provisional</u> obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response

13. Applicant's arguments directed to the above double patenting rejection were fully considered but were not deemed persuasive for the following reasons. Please note that the above rejection has been modified from it original version to more clearly address applicants' newly amended and/or added claims and/or arguments.

Applicants argue, "Applicants will consider submitting a terminal disclaimer to obviate the provisional rejection, if necessary" (e.g., see 4/6/04 Response, page 27, paragraph 1).

This is not found persuasive for the following reasons:

The Examiner contends that Applicants have acknowledged their duty to file the terminal disclaimer, but have failed to do so.

Accordingly, the double patenting rejection cited above is hereby maintained.

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New Rejections

Claims Rejections - 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 14. Claims 1, 10, 12 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Singhvi et al. (Singhvi, R.; Kumar, A.; Lopez, G.P.; Stephanopoulos, G.N.; Wang, D.I.C.; Whitesides, G.M.; Ingber, D.E. "Engineering Cell Shape and Function" *Science* **1994**, *264*, 696-698).

For *claims 1 and 34*, Singhvi et al. (see entire document) disclose a method for the fabrication of patterned substrata for the use in protein adsorption and cell attachment (see Singhvi et al., abstract and figure 1), which anticipates claim 1. For example, Singhvi et al. disclose depositing a first material selected from the group consisting of a group 6, 7, 8, 9, 10 and 11 metals form the Periodic Table of the Elements (e.g., see figure 1 wherein gold is deposited onto silicon wafers), onto a substrate in at least 10 regions (e.g., see figure 1B wherein the gold is deposited across the entire surface of the chip which corresponds to $5 \times 7 = 35$ regions i.e., light and dark spots), thereafter placing the substrate in a solution comprising a second material (e.g., see figure 1, step 4 wherein the substrate is placed in a solution of $HS(CH_2)_{11}(OCH_2CH_2)_6OH$), thereby modifying a surface tension of the substrate but not a surface tension of the first material in said at

least 10 regions (e.g., see figure 1B, light regions wherein the surface tension is not modified in the 12 regions containing the HS(CH2)₁₅CH₃ "ink" because the HS(CH₂)₁₁(OCH₂CH₂)₆OH is blocked from reacting with the gold in those regions), depositing at least 10 polymeric materials onto said at least 10 regions (e.g., see figure 1C/D wherein laminin and cells are subsequently deposited onto the alkanethiol inked substrate), and characterizing the at least 10 polymeric materials (e.g., see figure 1 wherein the materials are characterized using a scanning electron microscope).

For *claim 10*, Singhvi et al. disclose a hydrophilic HS(CH₂)₁₁(OCH₂CH₂)6OH second material (e.g., see figure 1).

For *claim 12*, Singhvi et al. disclose gold (e.g., see figure 1).

Conclusion

Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon D Epperson whose telephone number is (571) 272-0808. The examiner can normally be reached Monday-Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jon D. Epperson, Ph.D. November 1, 2004

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Please find below and/or attached an Office communication concerning this application or proceeding.